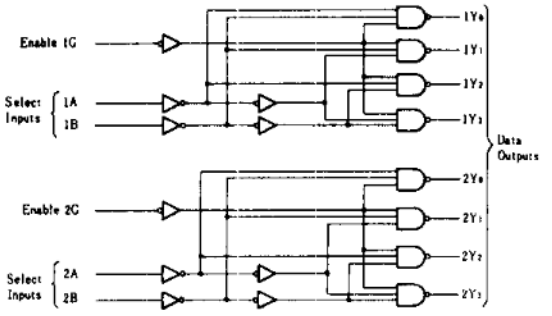
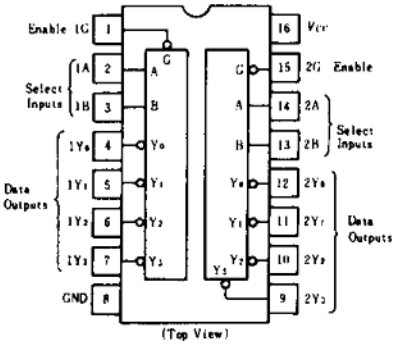
HD74LS139 ●Dual 2-line-to-4-line Decoders/Demultiplexers

The HD74LS139 comprises two individual two-line-to-four-line decoder in a single package. The active-low enable input can be used as a data line in demultiplexing applications.

■BLOCK DIAGRAM



■PIN ARRANGEMENT



■FUNCTION TABLE

Inputs			Outputs			
Enable	Select					
G	B	A	Y_0	Y_1	Y_2	Y_3
H	×	×	H	H	H	H
L	L	L	L	H	H	H
L	L	H	H	L	H	H
L	H	L	H	H	L	H
L	H	H	H	H	H	L

H; high level, L; low level, X; irrelevant

■ELECTRICAL CHARACTERISTICS ($Ta=-20\sim+75°C$)

Item	Symbol	Test Conditions		min	typ*	max	Unit
Input voltage	V_{IH}			2.0	–	–	V
	V_{IL}			–	–	0.8	V
Output voltage	V_{OH}	$V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$, $I_{OH}=-400\mu A$		2.7	–	–	V
	V_{OL}	$V_{CC}=4.75V$, $V_{IH}=2V$, $V_{IL}=0.8V$	$I_{OL}=4mA$	–	–	0.4	V
			$I_{OL}=8mA$	–	–	0.5	
Input current	I_I	$V_{CC}=5.25V$, $V_I=7V$		–	–	0.1	mA
	I_{IH}	$V_{CC}=5.25V$, $V_I=2.7V$		–	–	20	μA
	I_{IL}	$V_{CC}=5.25V$, $V_I=0.4V$		–	–	−0.4	mA
Short-circuit output current	I_{OS}	$V_{CC}=5.25V$		−5	–	−42	mA
Supply current	I_{CC}	$V_{CC}=5.25V$, Outputs enabled and open		–	6.8	11	mA
Input clamp voltage	V_{IK}	$V_{CC}=4.75V$, $I_{IN}=-18mA$		–	–	−1.5	V

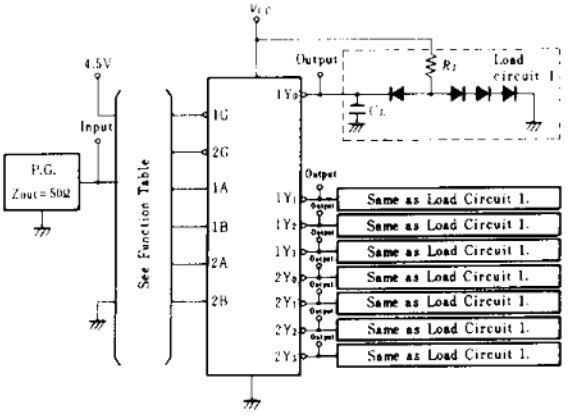
* $V_{CC}=5V$, $Ta=25°C$

■SWITCHING CHARACTERISTICS ($V_{CC}=5V$, $Ta=25°C$)

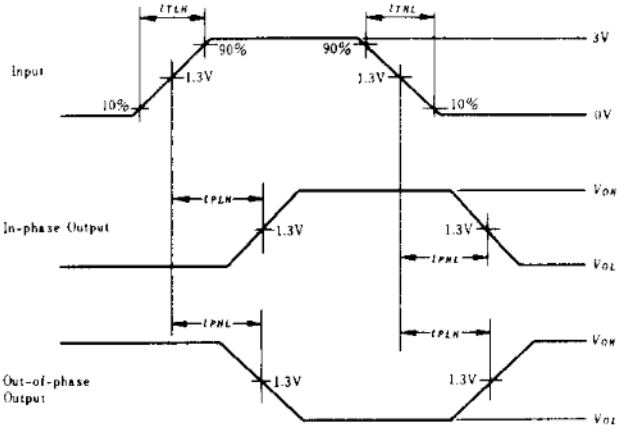
Item	Symbol	Inputs	Outputs	Levels of delay	Test Conditions	min	typ	max	Unit
Propagation delay time	t_{PLH}	Binary Select	1Y0~1Y3	2	$C_L=15pF$ $R_L=2k\Omega$	–	13	20	ns
	t_{PHL}					–	22	33	ns
	t_{PLH}	1A, 1B	2Y0~2Y3	3		–	18	29	ns
	t_{PHL}	2A, 2B				–	25	38	ns
	t_{PLH}	Enable	1Y0~1Y3	2		–	16	24	ns
	t_{PHL}	1G, 2G	2Y0~2Y3			–	21	32	ns

■TESTING METHOD

1) Test Circuit

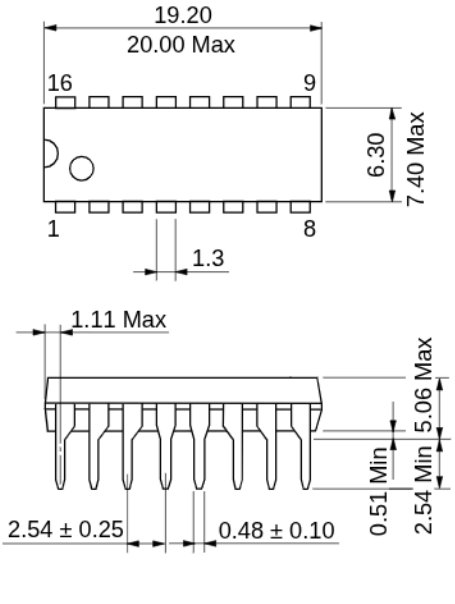


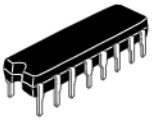
Waveform



Notes) 1. Input pulse; $t_{TLH} \leqq 15$ns, $t_{THL} \leqq 6$ns, $PRR = 1$MHz, duty cycle=50%
2. C_L includes probe and jig capacitance.
3. All diodes are 1S2074 Ⓗ.

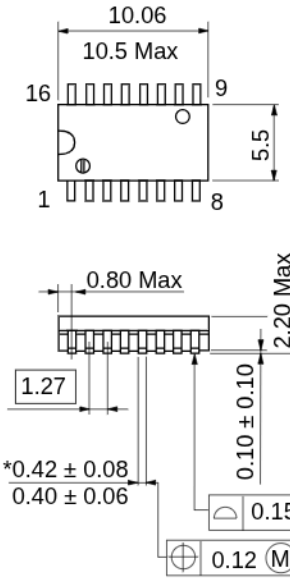
Unit: mm

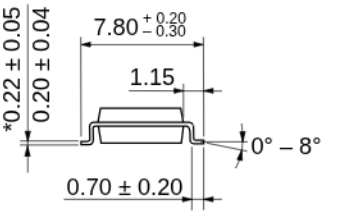




Hitachi Code	DP-16
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.07 g

Unit: mm

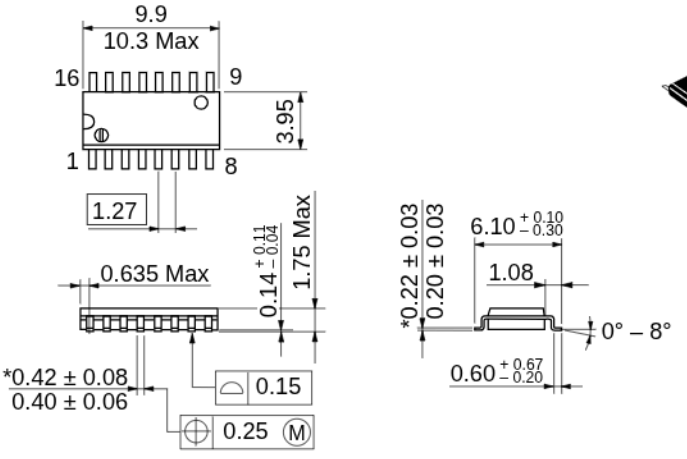




*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.24 g

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-16DN
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	0.15 g

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